

Material Safety Data Sheet (MSDS)

IN EMERGENCY - CONTACT THE POISONS INFORMATION CENTRE
(Telephone Number: 131126)

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GENERAL

Product name: **DMI-65**

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IDENTIFICATION

Other product names: De Iron De Manganese water filtration media
Synonyms: Silica Sand/Crystalline Quartz/ Quartz/ Silicon Dioxide
Appearance: Dark granules
Uses: Water filtration sand media
Manufacturers Code: Not Applicable
U.N. Number: None Allocated
Dangerous Goods Class: None Allocated
Subsidiary Risk: None Allocated
Hazchem Code: None Allocated
Poison Schedule: None Allocated
Packaging Group: None Allocated
EPG: None Allocated
Sub-tert risk: None Allocated

INGREDIENTS

CHEMICAL ENTITY	CAS NO.	PROPORTION
Quartz / Silicon Dioxide	(SiO ₂) 14808.60-7	> 90 %
Microcline	(KAlSi ₃ O ₈) Not available	< 9
Bixbyite	(Mn ₂ O ₃) Not available	< 1
Calcite	(CaCO ₃) 471.34-1	< 0.1

PRECAUTIONS FOR USE

EXPOSURE STANDARDS:

Unless specified otherwise, limits are expressed as milligrams of substance per cubic metre of air (mg/m³). 8 hour time weighted averages (TWA). Limits for cristobalite & tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

Respirable crystalline silica (quartz):

ACGIH TLV, OSHA PEL, & MSHA – proposed PEL = 0.1 mg/m³

Respirable dust:

MSHA = 10 mg/m³ (% respirable quartz + 2).

Total dust;

MSHA = 30 mg/m³ (% quartz +3).

Other particulates:

ACGIH TLV = 10 mg/m³ (total particulates, not otherwise classified)

OSHA PEL = 5 mg/m³ (respirable dust, not otherwise regulated)

= 15 mg/m³ (total dust, not otherwise regulated)

MSHA = 10 mg/m³ (total “nuisance” dust)

MSHA - proposed = 5 mg/m³ (respirable mine dust)

At this point in time there is a discrepancy in the standards for respirable quartz levels, of either 0.1 mg/m³ or 0.2 mg/m³. The interim National Standard is currently 0.2 mg/m³.

ENGINEERING CONTROLS:

This product should not be used as an abrasive blasting medium.

It is currently illegal to use it, both in Wet and Dry Blasting in Western Australia.

Follow protective controls set forth in this MSDS when handling this product. Respirable quartz – containing dust may be generated during processing, handling, and storage.

VENTILATION:

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

PPE:

Personal Protective Equipment is normally required.

When using large quantities or where heavy contamination is likely, wear dust proof goggles and PVC, rubber or cotton gloves.

Where an inhalation risk exists, wear a Class P1 (Particulate) respirator.

At high dust levels, wear a Powered Air Purifying Respirator (PAPR) with Class P 3 (Particulate) filter, an Air-line respirator or a Full-face Class P3 (Particulate) respirator.

RESPIRATORY:

The following is a Respiratory Selection Guide as per Worksafe:

Quartz Level	AS 1715 – 1991
Under 0.1 mg/m ³	Respirator optional
0.5 mg/m ³	Disposable type, Class P1
1.0 mg/m ³	Disposable or replaceable filter type
10.0 mg/m ³	Filter type, Class P3 or powered air purifying respirator with Class P3 particulate filter.
Over 10.0 mg/m ³	Airline respirator, positive pressure or self contained breathing apparatus, positive pressure.

If respiratory protection is required, employees need to be trained in its safe use and maintenance.

OTHER CONTROL MEASURES:

Respirable dust levels should be monitored regularly.

Dust levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed work stations.

HEALTH HAZARD INFORMATION

HEALTH EFFECTS

Crystalline Silicon Dioxide has been classified as a Hazardous Substance by Worksafe and one for which health surveillance is required.

ACUTE:

Exposure to dust may irritate respiratory system, eyes, & skin. Use of natural sand and gravel for construction purposes is believed not to have caused acute toxic effects.

Repeated overexposures to respirable crystalline silica for periods as short as 6 months has caused acute silicosis. Symptoms of acute silicosis include (but are not limited to): shortness of breath, cough, fever, weight loss, & chest pain. Acute silicosis is a rapid progressive, incurable lung disease & is typically fatal.

CHRONIC:

Chronic exposure to respirable quartz-containing dust in excess of appropriate exposure limits has caused silicosis, a progressive pneumoconiosis (lung disease). Chronic tobacco smoking may further increase the risk of developing chronic lung problems.

SYMPTOMS OF SILICOSIS:

Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis is progressive, & symptoms can appear at any time, even years after exposure have ceased. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased

risk of pulmonary tuberculosis infection.

In late 1996, the IARC (International Agency for Research into Cancer) upgraded its previous classification of crystalline silica from “probably carcinogenic to humans (Group 2A)”, to “Carcinogenic to humans (Group 1)”.

This was changed on the basis of a relatively large number of epidemiological studies that together provided “sufficient evidence” in humans for the carcinogenicity of inhaled crystalline silica under the conditions specified.

HEALTH HAZARDS

Low irritant. Avoid dust generation. Adverse health effects, usually associated with long term exposure to high crystalline silica dust levels are not anticipated, given the granular nature of this product. Chronic exposure to dust may cause lung fibrosis (silicosis). Crystalline quartz is classified as carcinogenic to humans (IARC Group 1)

SKIN:

Low irritant. Prolonged and repeated exposure to dust may result in irritation and dermatitis. Wash dust-exposed skin with soap and water. Wash work clothes after each use.

EYE:

Low irritant. Exposure may result in irritation and lacrimation. Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

INGESTION:

Low toxicity. This product is biologically inert. However, ingestion may result in gastrointestinal irritation due to mechanical action.

PRECAUTIONS:

Flammability: Not flammable under conditions of use. No fire or explosion hazard exists.

Reactivity: Incompatible with strong acids (eg Hydrofluoric acid).

Ventilation: Do not inhale dust/powder. Use with adequate natural ventilation. Where a dust inhalation hazard exists, mechanical extraction ventilation or dampening with water is recommended.

FIRST AID

EYE: (Dust exposure) Flush eyes gently with running water for 15 minutes. Seek medical attention if irritation persists or later develops.

SKIN: (Dust) gently flush affected areas with soap and water. Seek medical attention if irritation develops.

- INHALATION:** Leave area of exposure.
Dust in the throat and nasal passages should clear spontaneously.
Seek medical attention if irritation persists or symptoms later develop.
- INGESTION:** Due to product form application, ingestion is considered highly unlikely.

SAFE HANDLING INFORMATION

- STORAGE:** Store in a dry place.
Keep container closed when not in use.
Store away from oxidising agents and strong acids such as Hydrofluoric acid.
- TRANSPORT:** Refer to the Australian Code for the Transport of Dangerous Goods by Road and Rail.
If the quantity exceeds the limit permitted by the code then:
Product should not be loaded in the same vehicle or packed in the same freight container with:
- | | |
|-----------|---|
| Class 1 | :Explosives |
| Class 4.3 | :Dangerous when wet substances |
| Class 5.1 | :Oxidising agents |
| Class 5.2 | :Organic peroxides |
| Class 6 | :Cyanides only |
| Class 7 | :Radioactive substances (Health Dept) |
| Class 8 | :All corrosive substances (acids and alkalis) |
- Foodstuff and empty foodstuff containers
- SPILLAGE:** Contain the spill. If spilt (bulk), wear dust-proof goggles. PVC/rubber gloves and a Class P(Particulate) respirator (where an inhalation risk exists).
Persons involved in clearing should follow the precautions defined in this MSDS.
Spilled materials, where dust can be generated, may overexpose clean up personnel to respirable quartz containing dust. Wetting of spilled material and/or use of respiratory protective gear may be necessary. Do not dry sweep spilled material. Avoid generating dust.
- DISPOSAL:** Collect and place in sealable containers for disposal.
Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.
- ENVIRONMENT:** The main component/s of this product occurs naturally in the earth's crust. It is not anticipated to cause any adverse effects to plants or animals.
- FIRE AND EXPLOSION:** None known, not flammable. No fire or explosion hazard exists.
- EXTINGUISHING:** Non flammable.

PHYSICAL DESCRIPTION AND CHEMICAL PROPERTIES

INCOMPATIBILITY:	(Materials to avoid) – Contact with powerful oxidising agents such as fluorine, chlorine trifluoride, manganese trifluoride, and oxygen trifluoride may cause fire and/or explosions. Silica dissolves in hydrofluoric acid producing a corrosive gas – silicon tetra fluoride.
Observed Odour:	Odourless
Flammability:	Non flammable
Flammability limits:	Not applicable
Flash point:	None
Upper Explosion Limit:	Not relevant
Lower Explosion Limit:	Not relevant
Boiling Point:	2230 °C
Vapour Pressure:	Not available
Evaporation Rate:	Not available
% Volatiles:	Not available
Exposure Standard (TWA)	0.2 mg/m ³ silica, crystalline-quartz
pH:	Not available
Specific Gravity:	2.61
Melting point:	1610 °C
Solubility in water:	Insoluble

ADDITIONAL INFORMATION FOR MICROCLINE
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Concentration in this product: < 9%
 Molecular Formula: KAlSi3O8
 Molecular Weight: 278.2
 Solubility in cold water: Insoluble

EMERGENCY-ENVIRONMENT

Microcline is naturally occurring silicate (Feldspar) minerals.
 They are not anticipated to have an adverse effect on the environment.

ADDITIONAL INFORMATION FOR BIXBYITE
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Concentration in this product: < 1%

Molecular Formula:	Mn ₂ O ₃
Molecular Weight:	157.9
Other name:	Manganese oxide or Di Manganese Trioxide
Solubility in cold water:	Insoluble

EMERGENCY-ENVIRONMENT

Bixbyite is a naturally occurring mineral.
It is not anticipated to have an adverse effect on the environment.

ADDITIONAL INFORMATION FOR CALCITE

Concentration in this product:	< 0.1%
Molecular Formula:	CaCO ₃
Molecular Weight:	100
Other name:	Limestone
Solubility in water:	Slightly soluble (pH dependant)

EMERGENCY-ENVIRONMENT

Calcite is a naturally occurring mineral.
It is not anticipated to have an adverse effect on the environment.

ADDITIONAL INFORMATION FOR SILICA, CRYSTALLINE-QUARTZ
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General Comment: Silica is the most abundant compound in the earth's crust.

Concentration in this product:	> 90%
Molecular Formula:	SiO ₂
Molecular Weight:	60.09

HEALTH HAZARD – EYE

Direct contact may result in mechanical irritation.
Avoid rubbing the eyes as the surface may be scratched.

HEALTH HAZARDS – HEALTH HAZARD SUMMARY

Crystalline silica quartz is classified as a human carcinogen (1ARC Group 1)
It is also listed as a hazardous substance for which health surveillance is required according to the WorkSafe Australia Standard for the Control of Workplace Hazardous Substances.
The National Occupational Health and Safety Commission (NOHSC) recommends that where legislation exists that deals with the control of crystalline silica, and specifies lower exposure standard values for quartz, cristobalite and tridymite than those listed by NOHSC, then compliance with those exposure standards must be maintained.
The ACGIH recommend a TLV of 0.1 mg/m³.

HEALTH HAZARDS – INHALATION

Classified as carcinogenic to humans (1ARC group 1)
Smokers are likely to be more susceptible.
Chronic exposure to respirable silica dust may result in lung fibrosis (silicosis).

Symptoms include cough, wheezing and with progression, an increasing shortness of breath.

YWA: 0.2 mg/m³ (Silica Quartz).

TCLo (inhalation) : 16 000 000 particles / ft³ / 8 hours 17.9 years (human fibrosis).

LCLo (inhalation) : 300 µg/m³ / 10 years (human).

EMERGENCY – ENVIRONMENT

Silica occurs naturally as quartz, flint, distomite, agate, chaledony, chart and tridymite.

It is not anticipated to have an adverse effect on the environment.

HEALTH HAZARDS TOXICITY DATA

LDLo (Intravenous) : 20 mg/kg (dog).

LDLo (Intratrachea) : 200 mg/kg (rat).

ADDITIONAL SAFE HANDLING INFORMATION

EXPOSURE STANDARDS – TIME WEIGHTED AVERAGES:

Exposure standards are established on the premises of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced; strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

1ARC – GROUP 1 – PROVEN HUMAN CARCINOGEN:

This product contains an ingredient for which there is sufficient evidence to have been classified by the International Agency for Research into Cancer as a human carcinogen. The use of products known to be human carcinogens should be strictly monitored and controlled.

SILICA – MEDICAL CONSIDERATIONS:

Medical testing for those with frequent or potentially high exposure to silica (half the TWA or more) is recommended before beginning work and at regular intervals thereafter.

This should include: lung function tests – check x-rays every 1-3 years.

If abnormal chest x-ray develops, skin test for tuberculosis should be done. Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity use, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used, effectiveness of control measures; protective equipment used

and method of application. Given that it is impractical to prepare an MSDS which would encompass all possible scenarios. It is anticipated that users will assess the risks and apply control methods where appropriate.

Quantum Filtration Medium Pty Ltd Disclaimer:

The information and recommendations contained herein are based upon data available and believed to be both accurate and reliable.

Quantum Filtration Medium Pty Ltd has made no effort to censor nor to conceal deleterious aspects of this product.

However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by purchase, resale, use or exposure to our silica sand product. Customers-users of silica sand must comply with all applicable health and safety laws, regulations and orders, including the OSHA Hazardous Communication Standard.

If clarification or further information is needed to ensure that an appropriate risk assessment is made, the user should contact Quantum Filtration Medium Pty Ltd

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